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Development of a Model Library Microform Center

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DEVELOPMENT OF A MODEL LIBRARY MICROFORM CENTER

-Submitted to-

United States Environmental Protection Agency
Library Systems Branch
Washington, D.C.

-Prepared by-

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PREFACE

AN EXPLANATION FOR THE INCREASE IN USE OF DATA IN MICROFORM

It is important for the reader to understand that there is no question about the fact that scientific and technical information will increasingly be found in micropublished format. There are two sets of circumstances to justify this statement, both of which are economic. One aspect is relevant to the producer of technical information (the publisher) and the other, to the purchaser of the information.

Recent years have seen a dramatic increase in the costs of conventional paper publishing. A quadrupling of the raw costs of paper stock, a doubling of labor rates within the printing industry, and almost a doubling of postage rates are but a few of the cost centers that have plagued the industry. Research indicates that in the last 5 year period, subscription rates to popular periodicals have risen by over 50%. If one takes the last 20 year period, (base year 1957) costs have risen over 110%.

The technique of micropublishing reduces these cost centers by the following factors. 1) Microform material is less than one tenth the cost of paper. 2) Printing speeds are several orders of magnitude faster than paper printing (100,000 to 250,000 pages a minute is achievable) consequently less labor is involved. 3) Microform distribution costs are a fraction of the paper equivalent. A 100 to 500 page document could be shipped anywhere for the price of a first class stamp. The paper equivalent would cost several dollars first class, or, at second class book rates would still be over twice the cost and would take weeks to be delivered.

At present, the level of micropublished data seems to be relative to the size of a publications distribution. The broader based basic sciences and technology publications usually have at a minimum, back issues available on microfilm. The more specialized higher technology journals (with less distribution) are moving towards simultaneous paper and micro-publishing. It has also been reported that there are already some technical publications that are available only in microform. One thing is clear, there is a definite trend towards more micropublishing and less paper publishing. Paper has become a luxury that fewer and fewer consumers of technical data can afford.

Now let's consider the consumer of technical data. With a limited budget and rising costs of title acquisition, the consumer has to closely examine the relative importance of each title that is acquired, dropping those of limited utility. This can only be a temporary stopgap measure, however, if one considers the explosion in the generation of technical and scientific data in general. A few quotes from Alvin Toffler's Future Shock are appropriate here:

> "The rate at which man has been storing up useful knowledge about himself and the universe has been spiraling upward for 10,000 years"..."Prior to 1500, by the most optimistic estimates, Europe was producing books at a rate of 1,000 titles per year. This means give or take a bit, that it would take a full century to produce a library of 100,000 titles"..."And by the mid-sixties,

the output of books on a world scale, Europe included, approached the prodigious figure of 1,000 titles per day."..."Today, the United States Government alone generates 100,000 reports each year, plus 450,000 articles, books, and papers. On a world wide basis, scientific and technical literature mounts at a rate of some 60,000,000 pages a year.[1]

Others seem to agree. One government sponsored forecast predicts a fourfold to sixfold increase worldwide in scientific and technical literature between now and 1985.[2] So, realistically, budgets for information acquisition will have to go up if only to handle the increase in available and required titles.

But disregarding acquisition budgets and costs for a moment, where will all this data be stored? Consider two of the newest and largest libraries in the EPA; the Headquarters and Cincinnati Libraries. Headquarters is already holding some 200,000 books, periodicals and reports; roughly two-thirds of its capacity. Cincinnati has on its shelves approximately 150,000 items and is at 80% of capacity. Even if the above projections are discounted by 50%, it is clear that if left unchecked, both libraries would have to at least double in size over the next ten year period; a thought that nobody wishes to contemplate.

Thus, we have the primary consumer argument for microforms...it takes very little space.

[1]Toffler, A., Future Shock, Bantam Books, Inc., 666 Fifth Ave., N.Y. 1970, pages 30-31.
[2]Anderla, J. George, The Growth of Scientific and Technical Information: A Challange, Washington, D.C. National Science Foundation, Office of Science Information Service, 1974.

As a comparision, if the current collection within the EPA Headquarters Library was in microformat, (standard 4x6 microfiche) it could easily be housed in less than 10 standard 4x6 file cabinets.

SECTION I. INTRODUCTION

It has long been recognized by EPA Library Personnel that due to the increasing costs of acquiring titles in paper form, the space requirements involved to house them, etc., that microforms would play an increasingly important part in the acquisition and distribution of information within the organization.

The Environmental Protection Agency Library System, therefore, has, over time, accumulated a large collection of titles in microform. The collection is comprised chiefly of technical reports, back issues of scientific and technical journals and periodicals as well as several special interest collections. The size and range of the collections vary within the system based on the library location and the specific organizational mission.

It has recently become clear, however, that the use of microforms is not without its own set of problems. These problems cover the full range from acquisition of titles (the profusion of microformats, reduction ratios, film quality) to storage and retrieval (how should the collection be filed, the equipment necessary to retrieve and view microforms) to the output that the user must deal with; i.e., a paper print of the requested information, a viewer to read the data directly, or a duplicate of the film itself for viewing at another location.

Purpose of This Study

This study was undertaken to identify the many problem areas and present recommendations to deal with them. Further, it was hoped that

the data could be used to establish a Model library Microform Center that could be adopted by the various EPA library installations, large and small, be adaptable to non-library microform collections in other operational areas of the EPA, and be made available to other agencies (worldwide) for use within their library systems. The EPA Cincinnati Library was picked by the Chief of the EPA Library Systems Branch as the primary site to be used in the development of data for this study. Supportive data was also gathered from the EPA Headquarters Library in Washington, D.C.

The specific areas that were addressed in the conduct of the study were as follows:

1. The size and types of microforms in the collection and the identification of any significant trends for the future.

2. Identification of the user community and how microforms are (and/or) could best be utilized.

3. The optimum storage and retrieval equipment requirements for the collection at present and for anticipated growth.

4. The optimum reader equipment, printing equipment, duplicating equipment, furniture and physical layout for the development of a model center.

Each of the above areas of concern that were studied subsequently raised additional questions that are enumerated in the body of this report with suggestions or recommendations made where applicable.

Procedures Used

Data for the study was gathered through personal and telephone interviews with EPA library staff members and actual library users (primarily scientists and researchers), as well as selected suppliers of microform materials and equipment. In addition, an informal user survey was conducted over a two month period at Cincinnati. Lastly, an extensive literature search was conducted and the output was reviewed for additional findings and recommendations that might be pertinent to this study.

SECTION II. FINDINGS

Micropublishing Industry Personal Interviews

In an effort to determine near and long term trends in micropu'lishing a series of personal and telephone interviews were conducted with representatives of ten commercial micropublishing firms, two government agencies heavily involved in micropublishing, and a spokesman for the National Micrographics Association.

Prior to discussing the results, it must be mentioned that the term "micropublishing' is perhaps a misnomer as few companies under this umbrella term truly publish anything. The following are this writer's definitions of the categories of companies that are generally included.

Micropublishing Organization:

An organization that produces its own current output (reports, journals, magazines, etc) in microform in lie' of paper or as an optional alternative to paper. At present only a small minority of publishers fall under this category.

Microprinting Organization:

A firm that will take another organization's data base,(typically back issues) convert it to microform and either sell it directly or return it to the owner for sale. At present, this represents the largest segment of the industry. Most societal journals and magazines available in microform are produced in this manner.

Microrepublishing Organizations:

A firm that takes data from various sources, either edits the data, categorizes the data, or indexes the data in such a fashion as to produce a proprietary special interest package for sale in microform. This is the newest and most rapidly growing segment of the industry. It is noteworthy, that in many cases, the data being manipulated is public information, i.e. government generated data.

While many comments that were made during the course of the interviews reflect vested interests in what does happen in the future, there was a general concensus of opinion in the following areas:

Film Formats

The consensus in this area of concern is clear. There is no chance for a single microform to evolve at this time or in the near future. Trends within the three categories however, can be observed as follows:

Micropublishing:

It can be expected that more magazines and societal journal publishers (either directly or by subcontracting) will begin simultaneous paper and microform publishing. This will be accomplished in microfiche format at current NMA standards (98 image, 24x, 4x6). There will be no significant cost reduction attached to the purchase of the fiche itself as the cost to produce the film for a limited market (which is what the projection is for) will be as high as the paper copy.

Microprinting:

The major trend within this portion of the industry will be the increase of titles (of back issues) that will become available in the near term. 35mm roll film will become almost extinct (will be used only for newspaper microfilming) and 16mm film (at 24x) will continue to be the major output particularly for titles already on film. This will be optionally available in proprietary cartridges (Recordak or 3M) or in the proposed NMA universal cartridge if manufacturers ever build equipment to handle it.

At least two of the major microprinters (Xerox-University Microfilm and Microfilming Corporation of America) have begun to offer back issues of new titles in both roll film or fiche. To the extent that these organizations can convince the actual publishers to produce film concurrently, (hence becoming micropublishers) this area will grow. Significant growth in this area, however, is forecast in the longer term, 5-10 year period. Again, the NMA microfiche format will be used.

Microrepublishing:

The vast majority of output within this category of micropublishing is already being produced in microfiche (NMA Standard) format. It is anticipated that as new special interest topics are defined, more and more data bases will become available in microform. As an example, the relatively recent interest in environmental quality, energy matters, social legislation, etc., have all spawned numerous specialized information packages. The notable exceptions to this trend are in cases where the data base itself is large and the particular package has been in existance for many years

in roll form. Due to the fact that the customer base already owns a significant collection of film and already has reader equipment, these packages will remain in roll form. The Information Handling Services V.S.M.F. system is an example of this.

The Current Cincinnati Library Microform Collection

Description:

The Cincinnati Library microform collection consists of:

Approximately 500 rolls of 35mm film.

Approximately 1,000 rolls of 16mm film.

Approximately 7,000 16mm Recordak magazines.

Approximately 1,200 16mm 3M cartridges.

Approximately 100,000 4x6 microfiche.

The 35mm and 16mm roll film as well as the 16mm Recordak magazine portion of the file is comprised of back issues of technical and scientific journals and magazines. There are an estimated 250 titles within this portion of the file. The 3M cartridge collection represents two proprietary information packages which are 1.) The V.S.M.F. System - This is a collection of vendor catalogs, Mil Specs, and industrial catalogs that is typically used by engineering and purchasing personnel. 2.) Chemical and Biological Abstracts - As their titles imply, these are abstracts of articles and reports on work done in the two fields. This system uses an intricate indexing scheme that requires the use of a sophisticated microfilm retrieval terminal.

The microfiche collection contains copies of NTIS technical and research reports (EPA projects included) the now defunct AEC reports (which may be partially duplicated in the NTIS collection) and several proprietary report packages.

Examples of these are:

Congressional Information Service:

This file contains statistical publications of many government agencies, and most all congressionally generated reports.

Urban Documents Microfiche Collection - Greenwood Press:

This file contains a series of federal, state and municipal serials and periodicals organized under special interest catagories.

Collectively, it is estimated that the entire microform collection represents over 25,000,000 pages of information.

Cincinnati Library Microform Storage and Retrieval Equipment

The profusion of microformats has created the need for the library to maintain an assortment of readers and reader printers to handle each. The collection currently consists of:

2 Recordak IC-5 16mm magazine reader printers

1 3M 500C Pagesearch 16mm cartridge reader printer

1 3M 500M 16mm/35mm roll film reader printer

1 3M 500F microfiche reader printer

6 Miscellaneous microfiche desk top and portable readers

In addition to the reader equipment, the library also operates a low volume diazo duplicator for copying microfiche.

The microfiche collection, is housed in a power file and is located in a room next to the main library reading room. This same room accomodates all the other reading and printing equipment with the exception of the 3M 500C Pagesearch equipment, which is located on the opposite side of the library. The bulk of the roll/cartridge film collection is housed in file cabinets in an area near the equipment room.

Cincinnati Library Microform User Survey

A survey was conducted (see attachment 1 for sample questionaire) at the Cincinnati Library to determine utilization of data in microform, user reaction, and user habits. Data was gathered over 34 working days. Library personnel responsible for the data gathering estimate that questionaires were filled out for over 90% of all incidents of microfilm useage during the study period.

Over the study period, a total of 74 incidents of microform utilization were recorded. Table 1 shows the frequency of microfilm useage at the Cincinnati Library.

Table 1 - Frequency of Microfilm Utilization Per Day

0	1	2	3	4	5	6	7	8	9	10	# of incidents per day
5	11	6	4	5	2	0	0	0	1	0	# of Days
14.7%	32.3%	17.6%	11.7%	14.7%	5.9%				2.9%		

Quite obviously, the average daily number of requests for information on microfilm is low. This is not surprising as most of the film currently on hand represents old data. As a point of interest, there were 10 identifiable requests for data in excess of 20 years old and 3 of these were for data in back issue Journals dated in the 1930's. It must be noted, however, that while the number of incidents of Microfilm useage per day is low, the output is nevertheless substantial as the

requests are usually for multiple titles and/or multiple pages of data. Actual consumption of supplies indicate that an average of 465 duplicate microfiche and 1,800 pages of hard copy are produced monthly.

Table 2

INFORMATION RETRIEVAL CONDUCTED BY:

	# of incidents	Percentage
Library Personnel	22	30%
Actual Requestor	52	70%

Of the 22 searches conducted by library personnel, only 4 cases can be attributed to requests from outside sources (inter library loans). While 70% of the retrievals were conducted by the actual information requestor, the questionaires indicate that some library personnel assistance was required (assistance in locating film, machine operations assistance) to satisfy the request in almost every case.

Table 3

Retrieval Output:

	# of incidents	Percentage
Hardcopy prints	61	82%
Duplicate film	6	8%
View only	7	9%

The high percentage of retrievals resulting in hard copy prints may be attributed to several factors such as:

1. The majority of the film collection is currently in roll form and is not suited for film duplication.

2. The majority of users do not have microfilm reading equipment within their offices.

3. Paper copies are vastly preferred to film for reference purposes.

Table 4

TIME SPENT TO CONDUCT A MICROFILM RETRIEVAL

Under 30 Min.	1/2hr-1hr.	1-2hrs.	2-4hrs.	4-8hrs.	Not Given	
55	8	3	4	1	3	Number
74.3%	10.8%	4.0%	5.4%	1.3%	4.0%	Percentage

The vast majority of microfilm users spend less than 1/2 hour per incident of microfilm utilization. Evaluation of the questionaires indicate that this time is predominantly consumed in the generation of hard copy; i.e. the amount of data requested determined the time spent. Further, it is apparent that in most cases, the title of the data desired had already been established elsewhere, consequently, there is little microfilm "browsing" done as a result.

User Complaints

Of the 74 questionaires, 11 noted specific complaints. All were directly related to microfilm machine problems or poor print quality.

Personal interviews with questionaire respondents and other known users of the microfilm files, elicited additional negative comments as follows:

1. General lack of file organization:

At present, the film collections are seperated by microform. This is further complicated by the presence of film in both 3M and Recordak film cartridges and the resulting need for different readers.

2. Microfilm Machines are Noisy:

Several of the people interviewed made rather strong comments regarding the general noise level coming from the microfilm area. These comments were traceable to the roll/cartridge readers, the microfiche power file and the Xerox machine located in the microfilm area.

3. Difficulty in locating Microfilm Images:

This is a universal complaint among all users of microfilm, (particularly where the film is in roll format) as there is no uniform retrieval indexing technique applied to the various titles within the collection. For the most part, the user has to "hunt and peck" through a roll of film to find anything.

SECTION III

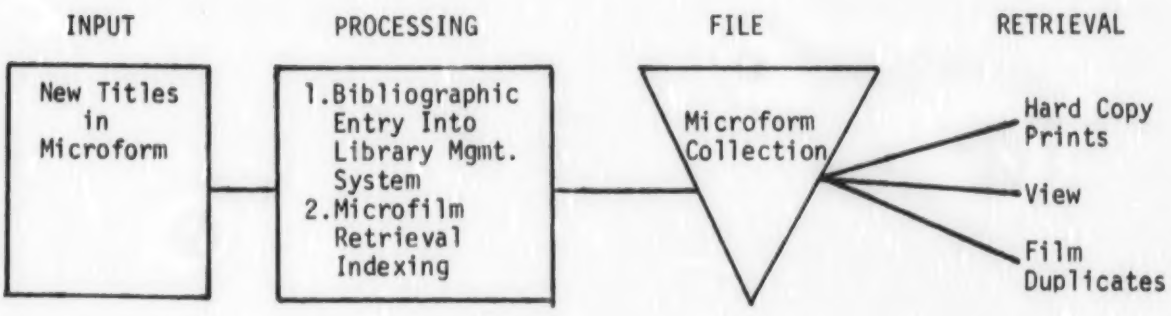
RECOMMENDATIONS AND OTHER FACTORS CONSIDERED IN DEVELOPMENT OF THE MODEL

Early in the study, it became apparent that construction of the model microform center would involve minimal physical and equipment change, but would involve major procedural change.

It must be emphasized that microfilm is simply a media, as is paper. It is a systems tool, not an end product in and of itself. It can be used as an effective tool to reduce the costs and improve the flow of information. The content of the microfilm then, is what is of prime concern to the end user. In other words, microfilm should be considered as an information carrier. For microfilm to be useable, the information contained must first be useable. As the user statistics indicate, by virtue of the very low frequency of microfilm useage, one has to question the viability of the data base itself.

It therefore became necessary to consider the total library system from initial data input (aquisition of information in microform) to eventual output, which is the actual physical model itself.

In block form, the process is conceived as follows:



The recommendations that follow are discussed along these same lines.

Aquisition of Titles in Microform

In order to avoid unnecessary purchasing duplication, control microformat proliferation, and maintain a high level of quality, it is recommended that a central focal point be established for the microform purchasing function. This could be accomplished by either delegating the authority to a central library or by establishing a library microform purchasing committee comprised of 3-4 librarians from major libraries.

Their major responsibilites would be to:

1. Develop policy establishing standards as to permissable microformats. It is felt at this time, 16mm 24x roll film as well as standard NMA (Type A-1) microfiche should be accommodated. With respect to roll film, it is recommended that the EPA no longer purchase roll film in 35mm format. 16mm 24x film should be purchased loaded in 3M cartridges where available or in conventional roll form. Film purchased in roll form should be loaded into 3M cartridges when received. All other microformat purchases would have to be justified as to the importance of the data and in light of other possible aquisition alternatives.

2. Review purchase requests for duplication and actual need. A surprisingly large number of rolls of film inspected at the Cincinnati library have never been opened. One has to wonder, therefore, how much of the data currently being purchased is actually needed.

3. Develop quality standards and inspect newly purchased film for compliance: Quality standards should be developed covering resolution, density, polarity and acceptable types of media. Precedures for spot inspection should also be developed.

Indexing

1. All titles aquired in microform should continue to be entered into the EPA Library Management System. It is recommended that the system be modified to accept a specific microformat code instead of simply denoting the fact that an item is on microform. Standard procedures could then be established for interlibrary loan purposes regarding the output; i.e. a copy of the film (if in microfiche format) or hard copy prints if the data requested is in roll format.

2. Develop and implement a uniform retrieval coding technique for roll film: It is recommended that the odometer indexing concept be adopted agency wide for roll film retrieval. (See attachment 2) This scheme requires no special coding on the film itself and would be particularly suitable for indexing back issue collections. It is felt that in these collections, the beginning of each issue (within each roll) should be positionally indexed. This operation will require approximately 10 minutes of clerical labor for each new roll of film added to the collection, but will more than pay for itself by eliminating the present "hunt and peck" routine that presently exists.

It is felt that this could be phased into operation as new film is added to the collection, although the more highly accessed titles already on hand could be converted to this system as time and labor were available.

Filing Equipment

Standard manual microform filing equipment (Attachments 3,4,5 and 6) is recommended as opposed to higher density automated files for the following reasons:

1. Economics - the relative amount of space saved by high density power files would in most cases not offset the high cost of the system.

2. Retrieval and File Maintenance - High density filing systems operate in a serial search mode. Consequently, only one user may operate the system at any given time. As volumes of retrieval requests go up, this will create a bottleneck in the retrieval and refiling of data as well as in normal file maintenance.

Also, the effects of putting "all your eggs into one basket" must be evaluated. If the file malfunctions, practial access to the data is lost until the system is repaired. Depending upon geographic location, and the nature of the problem, this could be a matter of hours to several days.

Furniture

It is recommended that all furniture be standardized as follows:

Reader and Reader Printer Workstations:
48" wide X 30" deep X 26" high

Work Tables:
48" wide x 18" deep x 30" high

Chairs:
Junior Executive type with arms, swivel, recline and castors

Lighting

Overhead lighting fixtures of the indirect fluorescent type should be used over all film viewing areas.

Retrieval Equipment

In order to negate the majority of user complaints regarding microform useage, it is strongly recommended that the Agency minimize the variety of readers and reader printers within each library. To do this, it will be necessary to carefully select readers and reader printers that provide for the highest degree of microformat flexibility while at the same time maintain a high degree of image and print quality. As there is not now (nor is there likely to be) a single "universal" microfilm reader printer that meets these criteria for all microformats, optimization will still require multiple machines, along microformat lines.

The following are the major selection criteria to be used in reader/printer equipment (based upon microformat) and duplicating equipment evaluation.

16mm Roll Film Reader/Printer Evaluation Criteria

1. Screen Image and Print Quality
2. Ability to handle different cartridge designs and open reel film
3. Indexing Techniques available (odometer preferred)
4. Operational Controls - Availability and Ease of Operation
   A. Automatic Film loading and feeding
   B. Variable speed controls
   C. Focus Controls
   D. Print Contrast Control
   E. Image Rotation
   F. Vertical Scan
   G. Positive print from positive or negative film
5. Ease of Maintenance
6. Consumables Compatibility, shelf life and cost
7. Purchase cost

Purchase of a maintenance contract is recommended for this category of equipment.

It is recommended that the reader printer (or equivalent) shown in attachment 7 be phased into operation eventually replacing all existing 3M Model 400C & 500C series and Recordak Microstar and Motormatic series reader printers. The approximate list price of the unit shown with required options is $2,000.00.

Libraries with significant 35mm holdings should continue to maintain existing reader printer equipment until these files can be withdrawn

from use. As an alternative, it is suggested that the possibility of centralizing all 35mm film in one library be explored with distribution of the information provided through the interlibrary loan system.

Microfiche Reader/Printers Evaluation Criteria

1. Screen Image and Print Quality
2. Indexing Technique available (Grid indexing preferred)
3. Operational Controls - Availability and Ease of Operation
   A. Automatic opening film platen.
   B. Focus Control
   C. Print Contrast Control
   D. Positive Print from positive or negative film.
4. Dual Magnification
5. Ease of Maintenance
6. Consumables Compatibility, Shelf Life and Cost
7. Purchase Cost

Purchase of a maintenance contract is recommended for this category of equipment.

It is recommended that a microfiche reader printer of the type shown in attachment 8 (or the equivalent) be phased in to operations replacing all existing microfiche reader printers.

The purchase cost of the unit shown with recommended options is approximately $1,200.00.

Microfiche Reader: Evaluation Criteria

1. Screen Image
2. Indexing Technique available (grid indexing preferred)
3. Operational Controls - Availability and Ease of Operation
   A. Automatic opening film platen
   B. Focus control
4. Dual Magnification
5. Dual Fiche Carrier
6. Noise level
7. Ease of Maintenance

There are two major design concepts in use today for microfiche readers. These are front screen and rear screen projection systems and are illustrated in attachments 9 and 10. Each has its own unique set of advantages and disadvantages and in the end, selection is usually based upon individual user preferences.

It is therefore recommended that prior to purchasing any large volume of readers, a user preference evaluation be conducted at one of the major libraries using a high quality version of each design type.

The purchase price of the units shown with recommended options is approximately $300.00 No maintenance contract is required for this category of equipment.

Portable Microfilm Readers

At this point in time there is no evidence that indicates a need for a portable microfilm reader within the library environment. Further, there is no clear agreement as to what the word "portable" (with respect to microfilm readers) even means. Should a reader be moveable? Should it be able to fit in a briefcase or even a pocket? Should it have its own power supply? Should it have a full sized screen or a miniature one? Or what!

If one considers the use of technical information in a research environment and the results of the user survey, one may conclude that at best, the library should be prepared to provide loan equipment. This should be the same type decided upon for use in the library.

Diazo Microfiche Duplicator Evaluation Criteria

A. Exposure station must have a positive means of maintaining emulsion to emulsion contact between the master film and the duplicate material. A vacuum system is recommended.

B. The processing station should not require special venting and should have a self contained ammonia absorption system.

Low volume diazo sheet film duplication systems of the type shown in attachment 11 should be available for use by library personnel. The correct operation of this equipment requires a fair degree of training

and skill and therefore, it is felt that this function would best be handled by trained library personnel rather than on a "do it yourself" basis.

Purchase cost of the recommended equipment shown is approximately $4,200.00. A maintenance contract is recommended for the processing section only.

Miscellaneous Recommendations

1. Refiling Microforms:

In order to maintain the highest possible degree of file integrity, it is recommended that library personnel refile all retrieved microforms.

2. User Awareness:

It is recommended that more agressive means be developed to "market" microfilm to the user community. This could be in the form of a bulletin or a newsletter listing new aquisitions and perhaps a short sucess story or two, outlining the user benefits of microforms as well as system improvements as they are made.

3. Library Personnel Education:

It is recommended that at least one person per library be appointed as microfilm key operator. These individuals should be trained in the operation and maintenance of all equipment and should be responsible for the routine checking of equipment operations, cleaning, consumables replacement, etc.

4. User Education:

It is recommended that simplified reader/printer operating instructions be prepared and placed in plain view. It is also felt that particularly if the odometer indexing concept is adopted, a brief user clinic be conducted, to demonsrtate the technique, as well as proper

equipment operation, etc. This could be accomplished by perhaps holding a one or two day microfilm library open house, with presentations repeated hourly or as required.

Section 4

The Model Microform Library

The design concepts of the model are based on the findings as previously described. The key feature is modularity and flexibility to allow for growth given different data base sizes, data base mixes (16mm,35mm, microfiche) and various levels of utilization. Other significant features are that all retrieval equipment, filing equipment, and furniture is standard and all noise producing equipment is isolated.

To illustrate the concepts of the model, two possible physical layouts are shown for small and large libraries in figures 1 and 2.

The walls shown as dotted lines would not be required if the modules were incorporated into an existing library and show only physical dimensions. They would be required only if the system were incorporated into a non-library environment, such as an office complex.

Figure I

Small Library Microform Center

General Description:

In this configuration, using less than 350 square feet of space, there is ample room to support:

Up to 4 reader printers of any microformat mix.

A, "on demand", Microfiche Duplicator System.

Xerox Equipment.

Supply Cabinet.

3 Microfiche Reader work stations.

8 Microform file modules which could contain (as shown) 8,910 rolls of 16mm film, expandable up to 12,510 rolls with the addition of the add-on upper modules

and

162,000 NMA format microfiche, expandable to over 180,000 microfiche with the addition of the add-on upper modules.

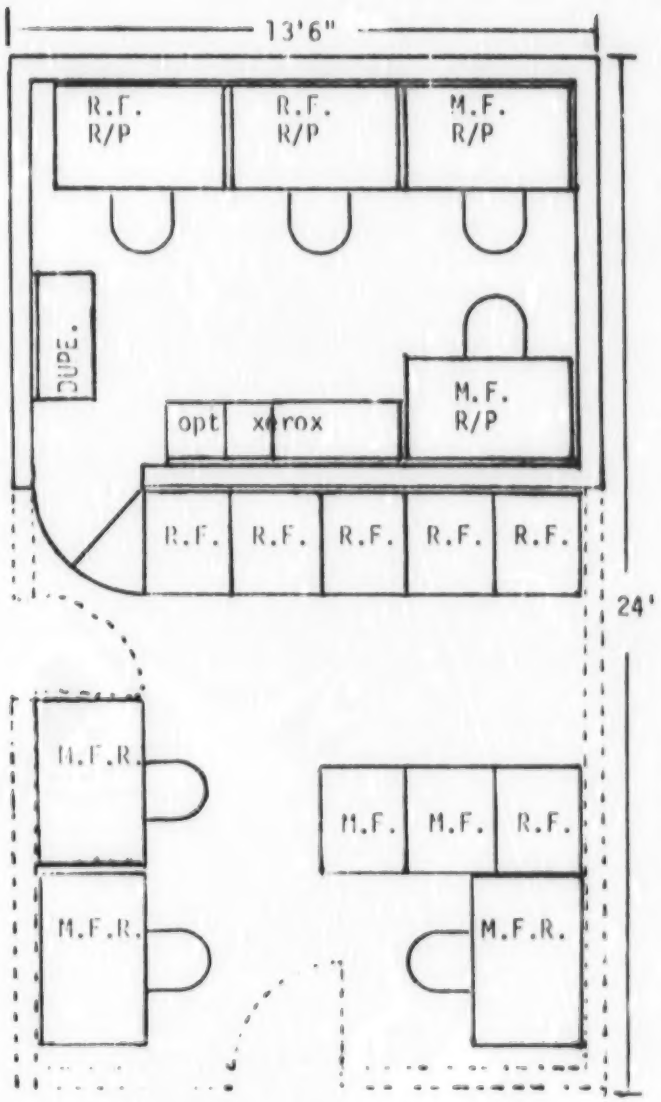
or

other variable combinations.

It is estimated that when fully equipped, the center could handle in excess of 100 users per eight (8) hour day.

FIGURE 1

SMALL LIBRARY MICROFORM CENTER



KEY:

R.F.= Roll/Cartridge Film

M.F.= Microfiche

R/P = Reader Printer

M.F.R.= Microfiche Reader Work Station

Scale: 1/4" = 1 ft.

Figure 2

Large Library Microform Center

In this configuration, using less than 925 square feet of space, there is ample room to support:

Up to 9 reader/printers of any microformat mix.

A, "on demand", Microfiche Duplicator System.

Xerox Equipment.

Supply Cabinet.

More than 12 Microfiche Reader work stations.

At least 24 microform file modules which could contain (as shown) 26,730 rolls of 16mm film, expandable up to 37,530 rolls with the addition of the add-on upper modules.

and

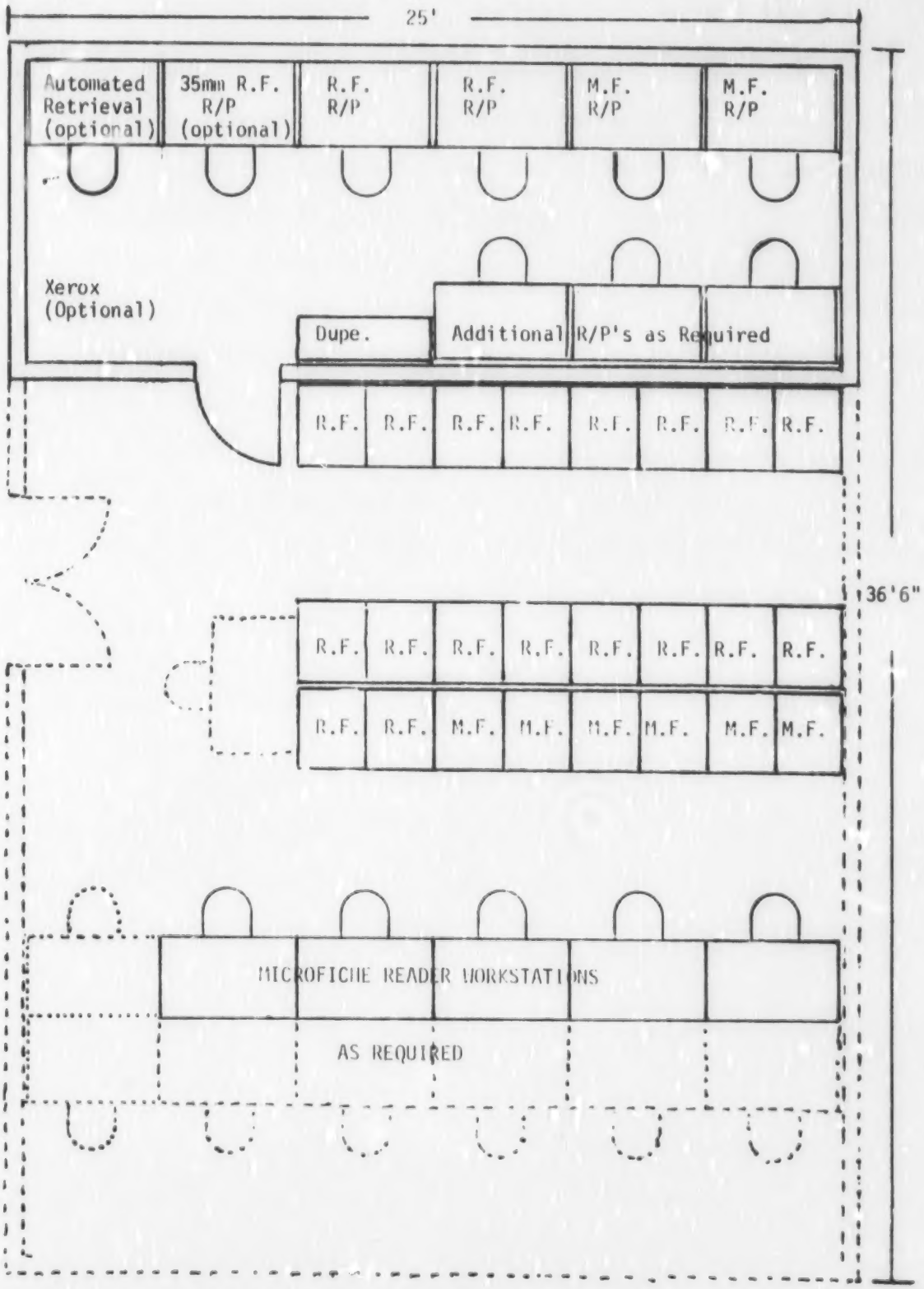
486,000 NMA format microfiche, expandable to over 543,000 microfiche with the addition of the add-on upper modules.

or

other variable combinations.

It is estimated that if fully equipped, the center could handle over 300 users per eight (8) hour day.

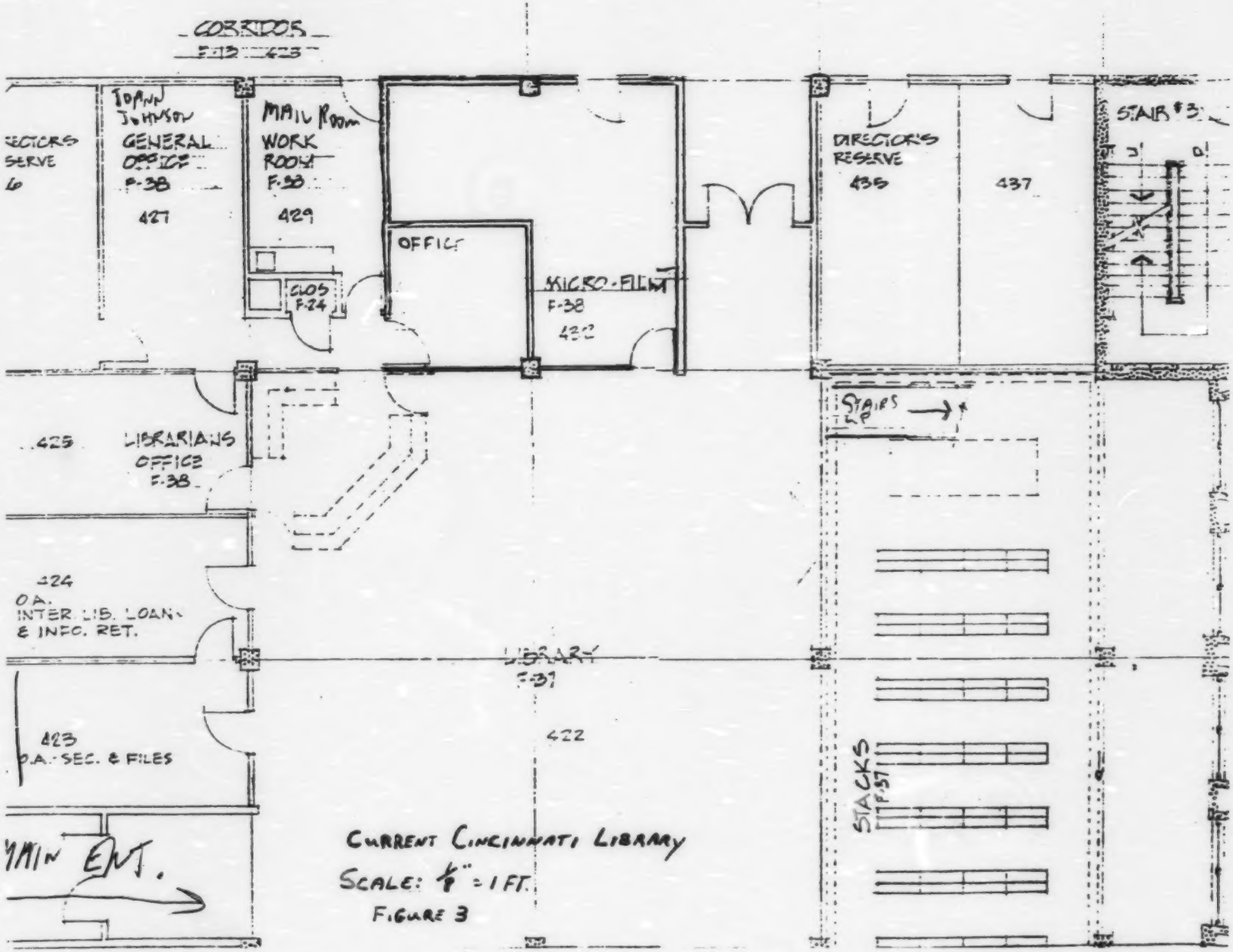
FIGURE 2
LARGE LIBRARY MICROFORM CENTER



The modular nature of the layouts shown will permit the user to grow into the maximum sizes illustrated. The only critical consideration for planning purposes is for the construction of the sound proofed area. This should be designed to handle a minimum of 4 reader printer work stations.

A very small installation, for example, could start out in roughly half of the area used in figure 1 (up to the file cabinets outside the soundproof wall) by eliminating 2 reader printer workstations and replacing them with 4 file cabinets. Outside, 2 file cabinets could be replaced by 1 microfiche reader work station.

As yet a further illustration of the adaptability of the basic design concepts, Figures 3 and 4 show how the model could be implemented within the Cincinnati library.

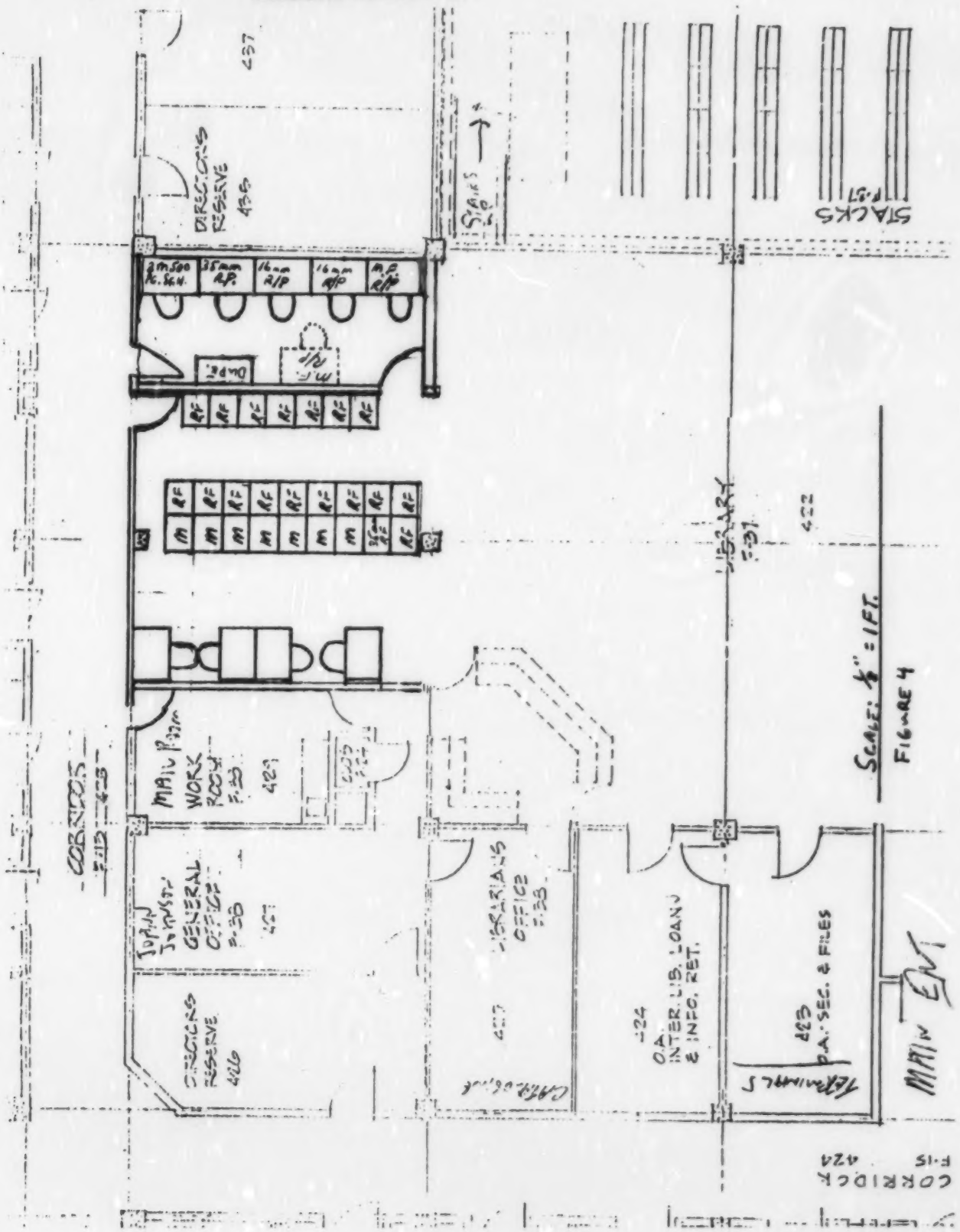


CURRENT CINCINNATI LIBRARY

SCALE: 1/8" = 1 FT.

FIGURE 3

Reproduced from
best available copy.



Operating Capacity:

In the configuration shown, the maximum file capacity of the Cincinnati Library would be:

Storage:

over 500,000 microfiche

over 1,000 rolls of 35mm film

over 35,000 rolls of 16mm film

Users:

It is estimated that the configuration could handle well over 100 users per eight (8) hour day.

Costs:

If all required equipment were purchased today the cost would be:

File equipment -						
18 -	16/35mm files:	MC-11-5NL	@$725.00	=	$13,050.00	
		MC-4-6-NL	@$495.00		8,910.00	
7 -	Microfiche Files:	MF10-3	@$750.00		5,250.00	
		SF-1	@$100.00		700.00	
		SF-2	@$135.00		945.00	
						$28,855.00
Furniture -						
9 -	Tables	48x30x26	@$240.00	=	$ 2,160.00	
1 -	Table	48x24x30	@$220.00		220.00	
9 -	Jr. Executive Chairs		@$185.00		1,665.00	
						$4,045.00

Retrieval Equipment -

2 -	16mm roll/cartridge reader printers	@$2,000.00	=	$4,000.00
1 -	Microfiche reader printer	@$1,200.00	=	1,200.00
4 -	Microfiche readers	@$ 300.00	=	1,200.00
				$6,400.00

Construction Cost -

No estimate of construction cost is available.

SECTION 5

ATTACHMENTS

Attachment I

Microfilm Users Survey

Date:_____

1- Identify user by name, department, area of specialty._____

_____.

2- What did he want? Identify specific data requested by title or state search question._____

_____.

3- What was length of time spent by: Requestor_____Library Personnel_____ in fulfilling the request.

4- What was the output; i.e. an oral answer to a question, viewing the data by the requestor, duplicate film, hard copy prints, etc. _____

_____(Prints or dupes, How many?)

5- What was the requestors reaction to: The ease or difficulty in satisfying the request_____; the quality of the film_____; the quality of reading equipment_____.

6- If requestor looked at the data on film, how much time was spent at a reader?_____.

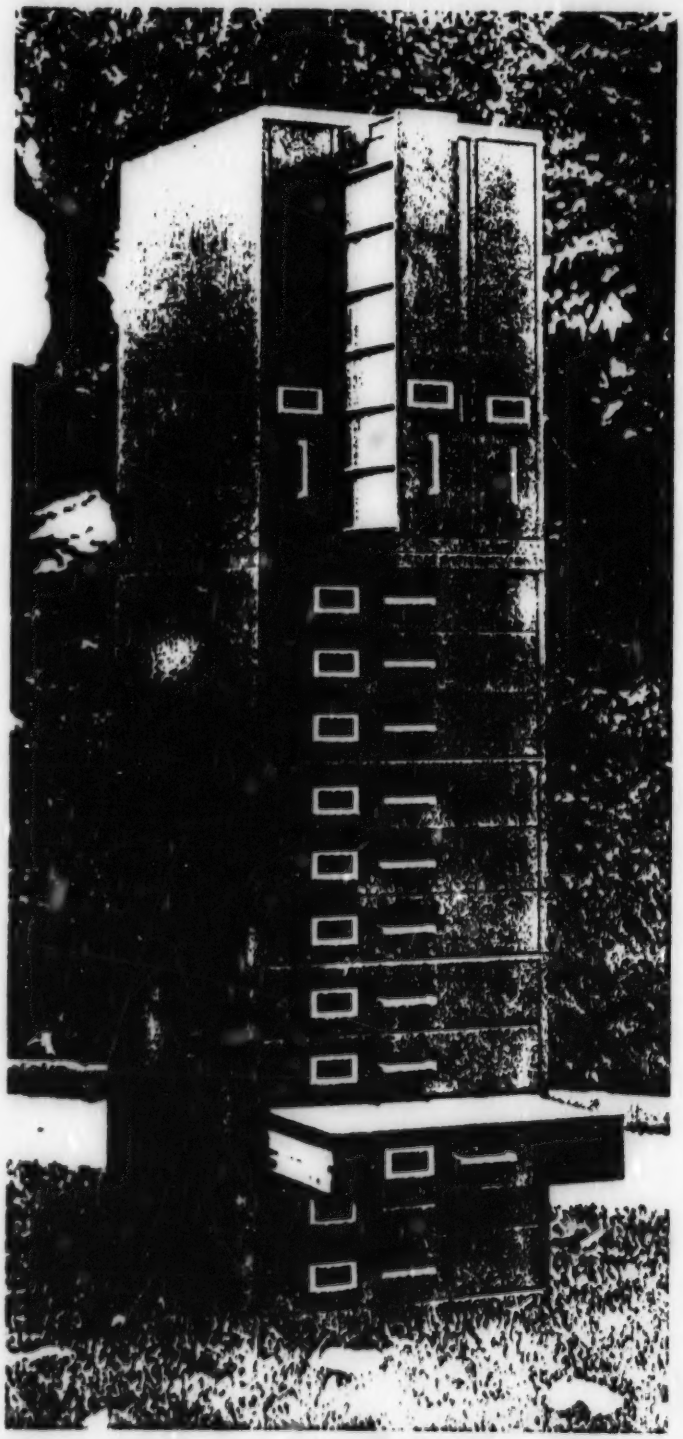
Attachment 2

Odometer Indexing Concept

Film pull down: a linear or sequential location of frames, closely related to an odometer on the machine which measures film length transported.

RUSS BASSETT COMPANY

Attachment 3

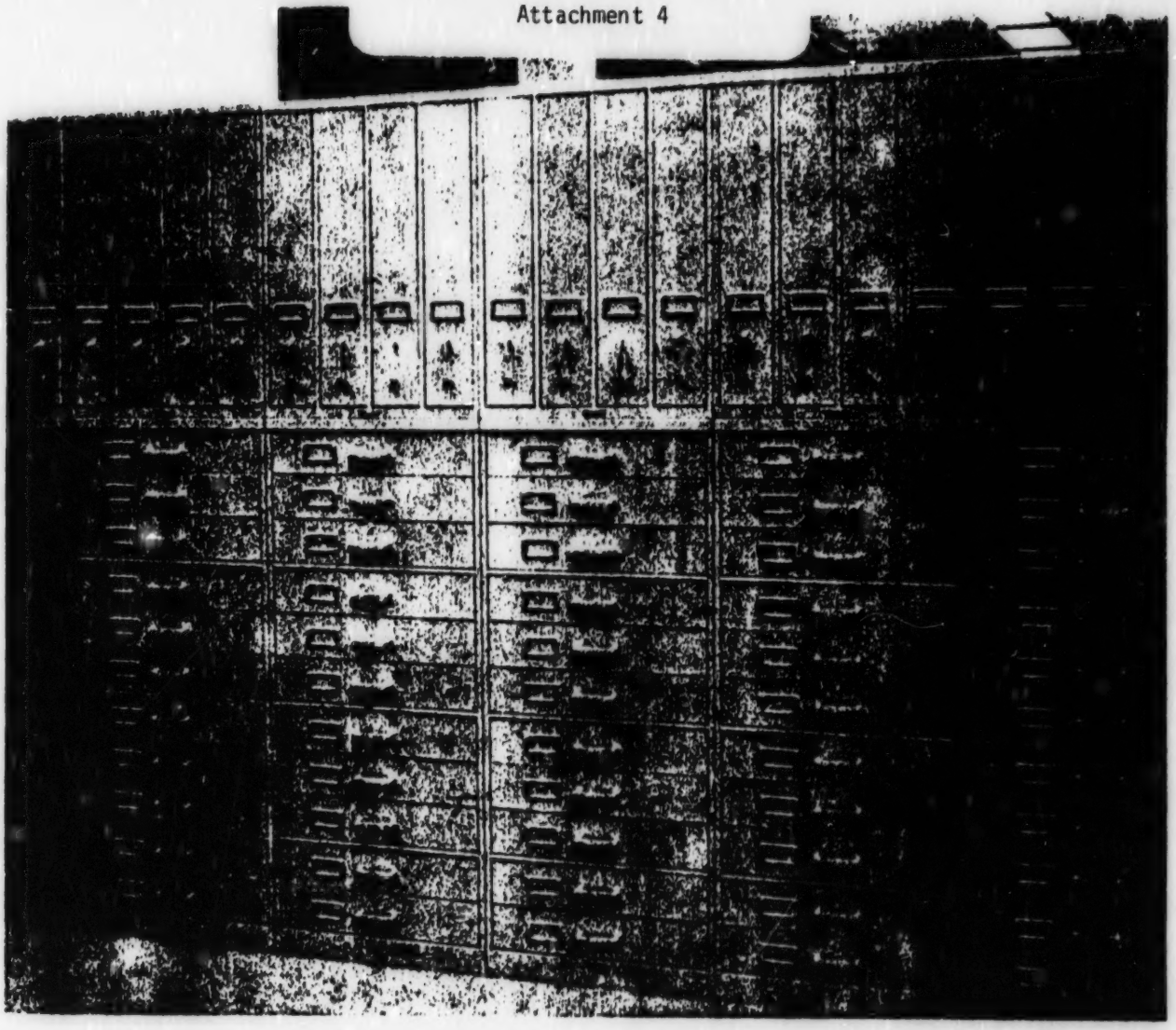


MICROFILM STORAGE

MC MODELS

Designed for years of quality service, the MC-11-5 Microfilm Cabinet provides the maximum in microfilm storage for either active or inactive records. Using traditional Russ Bassett Company construction, each unit is designed and engineered for exceptional strength and durability. All drawers glide effortlessly with whisper quiet operation to full extension on 150 lb. capacity ball bearing suspensions. This full extension capability allows storage utilization of entire drawer interior. The MC-11-5 cabinet will accommodate 1485 reels of 16MM film, 825 reels of 35MM film with a total capacity of 1512 linear inches. Each of the eleven horizontal drawers are divided into five equal compartments. Where additional storage space is needed the MC-4-6 companion Microfilm Cabinet allows additional storage capacity without sacrificing valuable floor space. While featuring the same full extension ball bearing suspension as the MC-11-5 unit, the drawers are constructed vertically with 6 rows each and are available in both left and right hand models. The MC-4-6 will hold 600 reels of 16MM film or 336 reels of 35MM film. Used in conjunction with the MC-11-5 the combined capacity is 2085 reels of 16MM film or 1161 reels of 35MM film. When used together, these units can be easily attached to ensure stability. Optional accessories include gang locks, compressors, and flush drawer pulls for a more contemporary appeal. A wide range of standard finishes are available and special colors upon customer's request.

Attachment 4

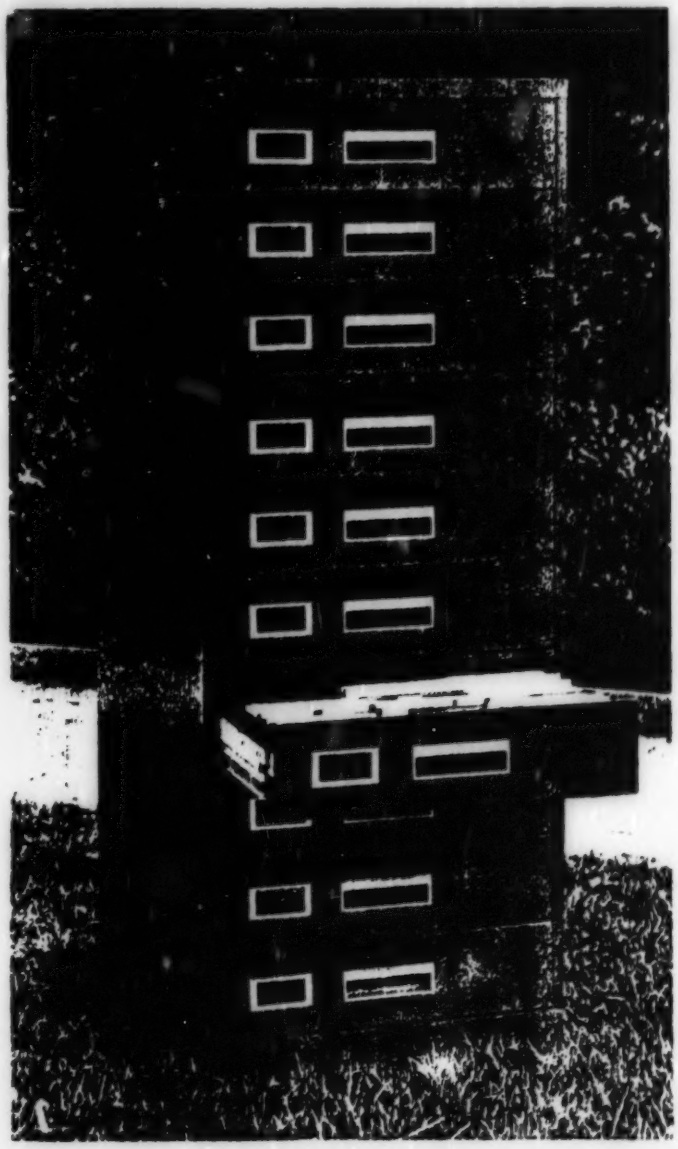


SPECIFICATIONS

MODEL	DESCRIPTION	LIN. IN.	CAPACITY 16MM ROLLS	35MM ROLLS	OUTSIDE CASE DIM. W	H	D	WEIGHT
MC-4-6-NL	Upper Unit	612	600	336	23¾"	33"	28½"	265
MC-4-6-WGL	Same with lock	612	600	336	23¾"	33"	28½"	270
MC-11-5-NL	Lower Unit	1512	1485	825	23¾"	57½"	28½"	425
MC-11-5-WGL	Same with lock	1512	1485	825	23¾"	57½"	28½"	430
TOTAL — UPPER & LOWER UNITS		2124	2085	1161	23¾"	90½"	28½"	690

RUSS BASSETT COMPANY

Attachment 5



MICROFICHE STORAGE

MF MODEL

Requirements for medium to extensive microfiche storage, either active or inactive, can be readily and easily accomplished by the Russ Bassett Company MF-10-3 Microfiche Cabinet. Designed, engineered and constructed using the highest quality materials and workmanship, the Russ Bassett Company Ten Drawer Microfiche Cabinets assure years of trouble free utility. All drawers operate effortlessly and silently to full extension on a 150 lb. capacity ball bearing suspension. This full extension capability allows storage utilization of entire drawer interiors. The MF-10-3 Microfiche Cabinet offers a dust free filing capacity of 81,000 microfiche forms with a total linear storage of 810 inches. The MF-10-3 is comprised of ten drawers, each with three rows. Standard equipment includes a compressor in each row to ensure proper microfiche protection. Contemporary in design, the MF-10-3 Microfiche Cabinet features flush drawer pulls and optional gang lock. A wide range of standard finishes are available, and special colors upon customer's request.

SPECIFICATIONS

MODEL	DESCRIPTION	LIN. IN.	MICROFICHE	OUTSIDE CASE DIM. H	W	D	WEIGHT
MF-10-3	Ten Drawers	810	81,000	57½	21¼	28½	350

4

RUSS BASSETT COMPANY

Attachment 6

MICROFICHE MICROFILM

SF MODELS

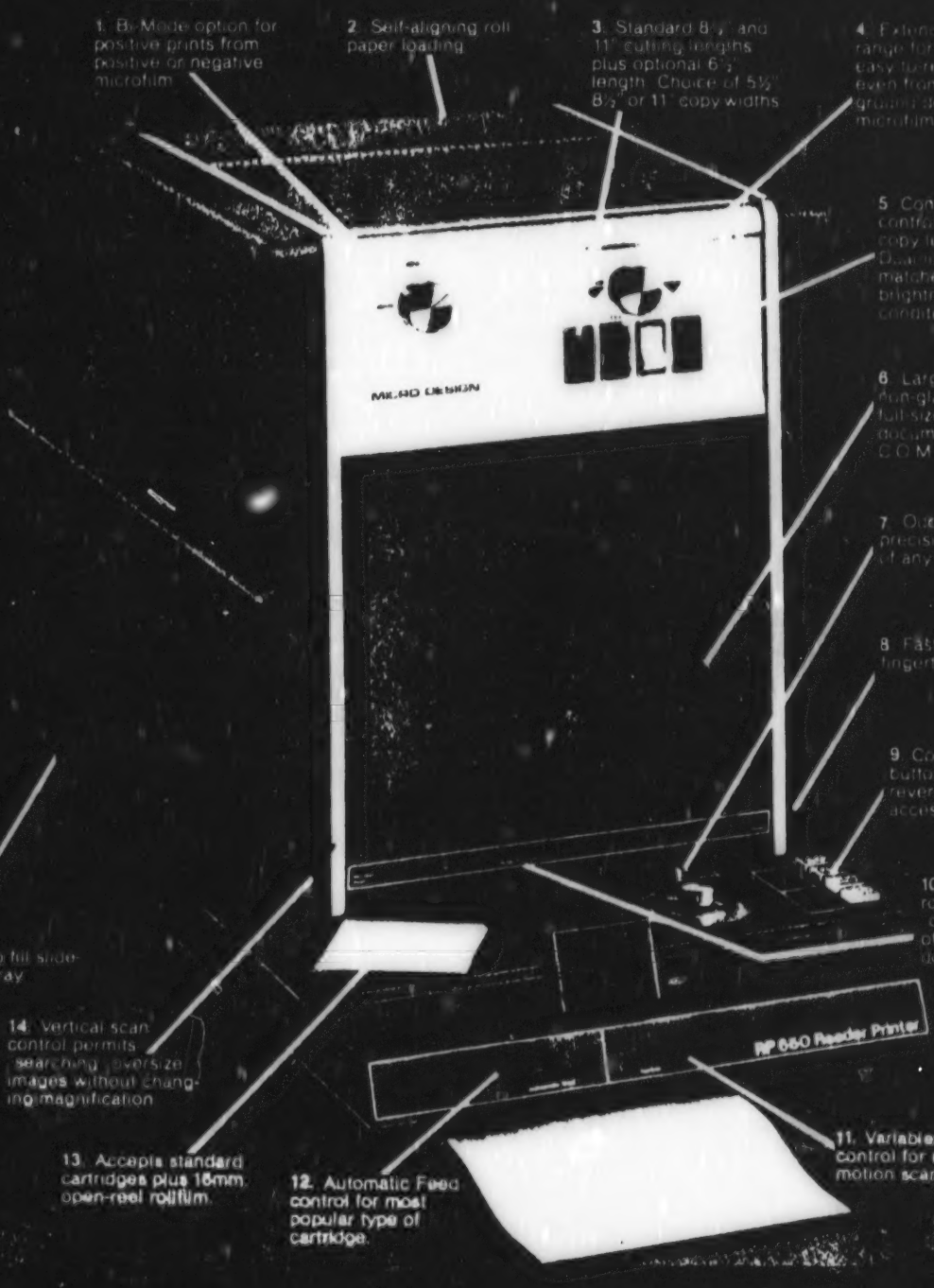
"Stackable Cabinets" by Russ Bassett Company offer the ultimate flexibility in microfiche/microfilm storage. Because of the modular stacking construction, both large and small storage requirements can be easily met. The one drawer unit SF-1 may be used when a minimum amount of storage capacity is needed. When additional space is required, the one and two drawer units may be used together. This expanded filing capability eliminates excessive storage space and unnecessary expense. Drawer interiors may be adapted to either microfiche or microfilm filing by means of an adjustable divider. When housing microfiche, each drawer will accommodate two rows with a total capacity of 3,200 microfiche. Compressors for microfiche filing are standard equipment. Storage of microfilm is made possible by inserting an additional divider, resulting in three rows of film filing per drawer. Using furniture grade steel with an all welded construction, each unit is built for the optimum in service and durability. Individual modular units are easily and securely locked together with an intermembering device. Features include flush drawer pulls, optional gang lock, and a wide range of standard finishes.

SPECIFICATIONS

MODEL	DESCRIPTION	DRAWERS	CAPACITY			OUTSIDE CAB. DIM.			WEIGHT
			MICROFICHE	35MM	16MM	H	W	D	
SF-1	Microfilm Microfiche	One	3200	27	48	6½	15	18	25
SF-2	Microfiche Microfilm	Two	6400	54	96	12¾	15	18	45
S-T	Top					¾	15	18¼	8
S-B	Base					2	15	18	6

Attachment 7

Puts YOU at the controls.



1. Bi-Mode option for positive prints from positive or negative microfilm.

2. Self-aligning roll paper loading.

3. Standard 8½" and 11" cutting lengths plus optional 6½" length. Choice of 5½", 8½" or 11" copy widths.

4. Extended contrast range for sharp, easy-to-read copies even from low-back ground density microfilm.

5. Convenient up-front controls for contrast, copy length, on-off, D-max light intensity matches screen brightness to viewing conditions.

6. Large 11" x 11" non-glare screen for full-size source document or C.O.M. viewing.

7. Odometer for precision location of any image.

8. Fast, precise fingertip focus control.

9. Convenient 2-speed buttons (forward or reverse) for quick access to data.

10. Full 360° optical rotation of image for on-the-level viewing of random filmed documents.

11. Variable speed control for slow-motion scanning.

12. Automatic Feed control for most popular type of cartridge.

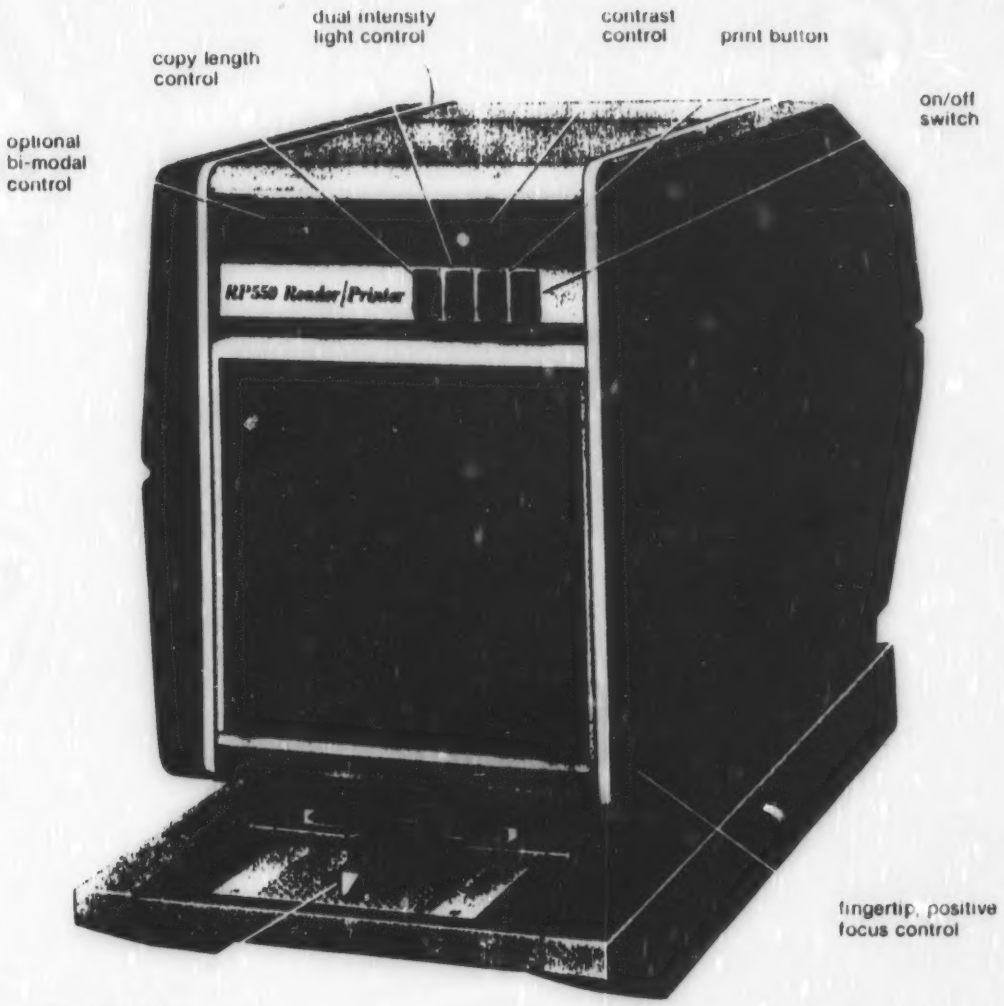
13. Accepts standard cartridges plus 16mm open-reel roll film.

14. Vertical scan control permits searching oversize images without changing magnification.

15. Easy to fill slide-out toner tray.

RP550 Reader/Printer

Attachment 8



EASY ON YOUR BUDGET

The RP550 Reader/Printer produces high quality permanent copies quickly and at minimum cost. Copies, printed in less than 8 seconds, cost under 5¢ per copy*. Economical operation plus low initial investment add up to your best buy in reader/printers.

* Per 8 1/2" x 11" copy. Cost varies according to copy length and width.

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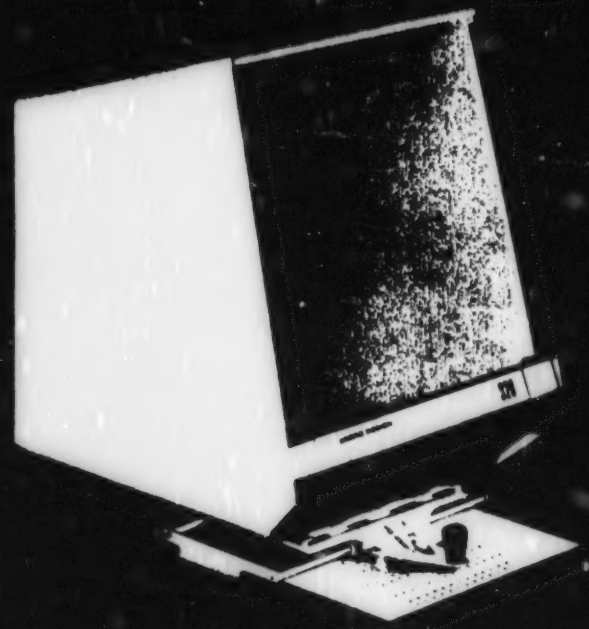
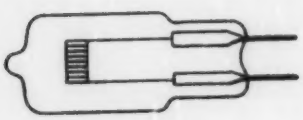
Attachment 9

920 microfiche reader



If your requirements include viewing of C O M data, the 920 Microfiche Reader has been designed for you. The large 11" x 11" non glare screen will give a bright razor sharp image from edge to edge. Will accept all jackets, microfiche and aperture cards for versatility in viewing capability unequalled in a reader of this size.

Choice of DROP IN lenses with magnifications from 18x to 52x. Also available in DUAL LENS option with "flick of your wrist" changing from low to high magnification. Either fan cooled or ultra quiet "hybrid" models. Hybrid reader features extended lamp life of over 1500 hours.



Two intensity "Longer Life" Quartz Halogen lamp for even screen illumination

Modular in design. Three interchangeable hoods to satisfy changing requirements.

Floating lens system for uniform clarity across entire film plane

Automatic opening film carrier opens when pulled towards the operator

Finger tip selector and interchangeable index grids assure fast access to any image on the film

Positive, adjustable focus control assures perfect clarity

from the award-winning

Attachment 10

The Valiant.

We've set a new industry standard for clarity and indexing.

The best front projection image in the business. Period.

Here's a front-projection reader that delivers a truly flat, distortion-free image of extraordinary clarity and brightness...corner-to-corner. **Absolutely** no keystoning. Designed on the basis of a 3/4 size image...the most widely used in the industry...it sets new standards for microform quality. Metric construction, new materials and advanced optics puts this unit far ahead of its nearest rival.

Indexing that's on target... every time.

You can be sure of accurate, rapid and easy location of material because our exclusive Posidex system provides you with the most precise location of X and Y coordinates you've ever seen.

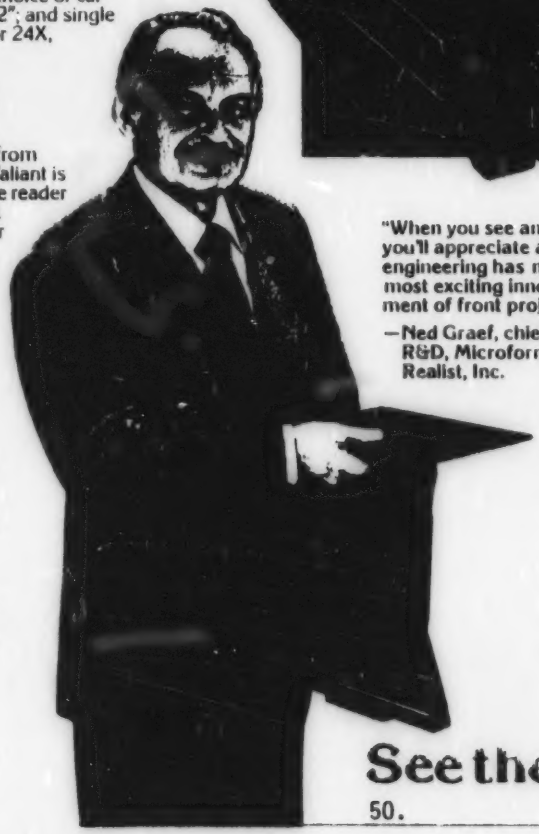
You also have a choice of carriers, 4x6", 4x8", or 4x12"; and single or dual lenses made for 24X, 42X or 48X formats.

Easy on the eyes and ears.

Open or closed, from every angle, the new Valiant is an attractive, low profile reader that takes up less desk space than a typewriter and blends in with any decor. Since it has no fan producing distracting noises, the Valiant will be welcome in any office.

And it's cool.

Keeping film plane temperature to a minimum is important in every system. With the Valiant, an invisible chimney keeps everything cool. This unique engineering advance directs the heat away from the film plane... and the operator.



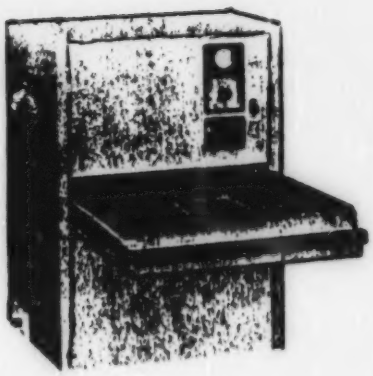
"When you see and operate the Valiant, you'll appreciate all the differences Realist engineering has made. It's definitely the most exciting innovation since the development of front projection."

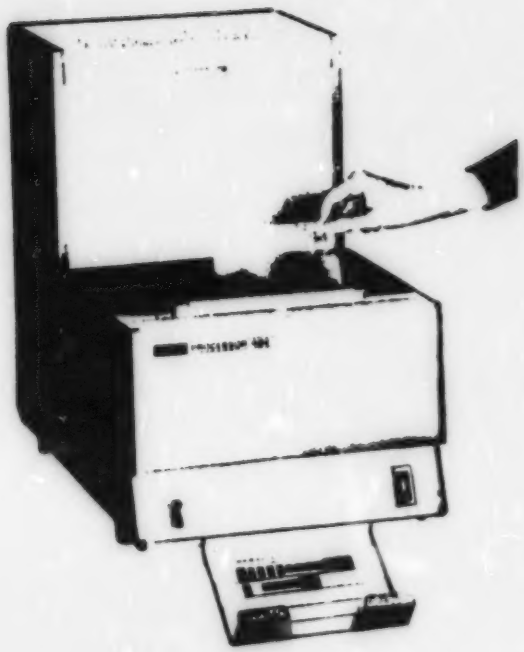
—Ned Graef, chief engineer, R&D, Microform Products Division, Realist, Inc.

See the bright new readers

50.

Attachment 11





Philip J. Gary and Associates

MICROGRAPHIC SYSTEMS CONSULTING SERVICES

14021 MARQUESAS WAY
MARINA DEL REY, CALIFORNIA 90291
(213) 823-0508

February 11, 1977

PB263586

Ms. Sarah T. Kadec
Chief- Library Systems Branch PM-213
U.S. Environmental Protection Agency
401 M St SW
Waterside Mall

Dear Ms. Kadec:

Please accept this letter as a release to permit NTIS to reproduce and make available the report entitled "Development of a Model Library Microform Center."

Yours truly,

Philip J. Gary
President
Philip J. Gary & Associates

CASE FILE